Hobbies WEEKLY

CONTENTS

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A MODEL ELECTRIC AUTOMATIC GARAGE

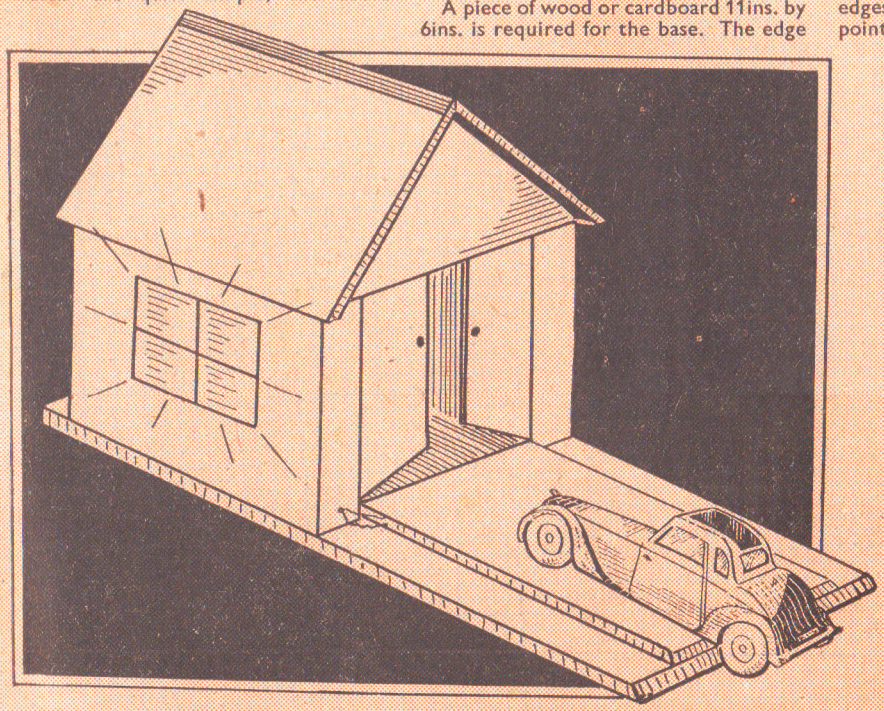
MODEL cars or a doll's house will be well set off by this ultra-modern garage, which foreshadows things to come by automatically opening the doors and switching on the light when the car approaches. Full instructions are given for making it up as a separate piece of work, but the idea could, of course, be incorporated into any other work as required.

Wood and Works

The measurements given make up a garage 6ins. high and 6½ins. wide, and wood of ¼in. thickness is allowed for. As will be seen, only small pieces of wood are required, or stout cardboard could be used if reinforced at the corners. The 'works' are quite simple, the doors being opened by elastic and the lighting provided from a torch battery.

Both are operated by the runway, which is made to drop slightly as soon as a car alights on it. This releases the doors, which are then pulled back by the elastic. It also closes the wiring circuit, to light up a flash-bulb from the torch battery concealed in the roof.

A piece of wood or cardboard 11ins. by 6ins. is required for the base. The edge that will form the end of the runway is tapered off, as shown in the sketch. The sides of the garage are 3½ins. high and 4½ins. wide, and it will be seen from Fig. 1 that windows are cut out in these, and covered with Cellophane or similar transparent material.



The roof consists of two pieces 5½ins. by 4½ins., with one of the long edges on each bevelled to meet with a point at the ridge. One of these sections is glued permanently to the walls, but the other is hinged at the top, to allow easy access to the inside of the model. A strip of stout paper or thin card, if folded lengthways and glued to the two parts, forms quite a satisfactory hinge.

Front and Back

Start off by marking out two identical pieces for the front and back, each 6ins. wide to a height of 3½ins., then tapered to a point at a total height of 5½ins. When these are cut out, one piece, forming the back, is ready. The other has to be cut into five pieces for the front.

First cut off the top triangle piece which will measure 2½ins. from top to base. Next cut a 1in. strip from either edge of the other piece, so we have two pieces 3½ins. by 1in. to go by the side of the doors. Finally cut the other piece in half the long way, to make the two doors. Then shorten them ¼in. so they both measure 3¼ins. by 2ins. The doors are thus ¼in. shorter than the piece that goes down either side of them, so that

when the floor is added to the inside of the garage, to keep the run-in level, these doors will clear it.

The Runway

The runway is a piece of wood 4ins. wide and 5½ins. long. Where it meets the tapered edge of the base it is also tapered, to make a smooth incline for the cars. Later this piece is hinged to the base with stout paper or card, as shown, the other end of it just reaching up to the garage doors.

A little catch is required, to engage the runway with the doors. This is simply a piece of stiff brass or tin, 1in. long and ½in. wide. Bend it to a rightangle ¼in. from one end, then fix it to the runway with two screws. It needs to be exactly

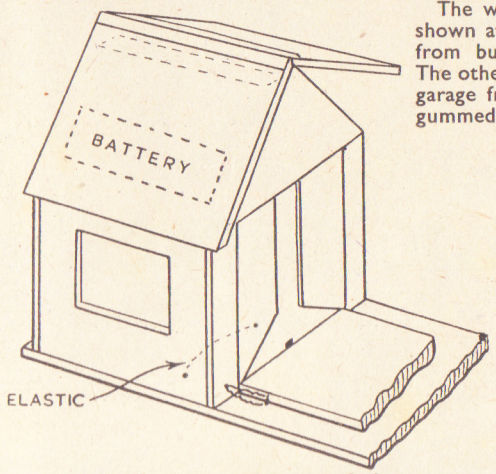


Fig. 1—The garage and floating platform

in the centre of that edge which comes up to the doors.

It will be seen from Fig. 2 how this little metal piece is fixed with the bent edge projecting ¼in. or sufficiently to engage the bottom edge of the doors when the runway is in the raised position. The same detail shows the two small screws which are put one in the under side of the runway and the other in the base exactly underneath it, to form the electrical contact maker.

The Lighting

Before we put on the hinged part of the roof or the garage doors, it is best to fit in the lighting. First cut a strip of wood 4½ins. long by 1in. wide, and screw down in the middle of it a flash-bulb holder (which can be obtained from any electrical stores for a few pence). This piece is then glued or screwed to the front and back of the garage, immediately under the eaves.

To economise space, use a single-cell type torch battery. This is held between two little carriers, cut from brass or tin and screwed to the underneath side of the fixed half of the roof. Fig. 3 shows how the two pieces are cut and bent, and then screwed down to hold the cell between.

In order they may make good contact, it is necessary to cut off the overhanging

CUTTING LIST

for wood of ¼in. thickness

No.	*Description*	*Size*
1	*Base*	*11ins. by 6ins.*
2	*Sides*	*4½ins. by 3½ins.*
2	*Roof*	*5½ins. by 4½ins.*
2	*Front and Back*	*6ins. by 5½ins.*
1	*Runway*	*5½ins. by 4ins.*
1	*Lamp Strip*	*4½ins. by 1in.*
1	*Floor*	*5½ins. by 4½ins.*

flange of cardboard that the makers usually put at the top and bottom of this type of round single cell battery.

The wiring up is quite simple and is shown at Fig. 4. One wire goes direct from bulb holder to battery contact. The other travels down the inside of the garage front (held down with strips of gummed paper) and comes out through

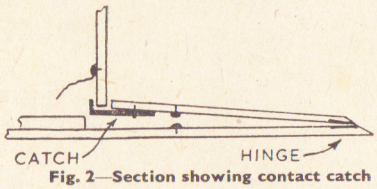


Fig. 2—Section showing contact catch

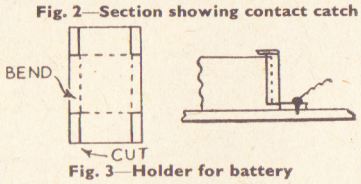


Fig. 3—Holder for battery

a hole in one front upright, as shown. Here it is connected to one of the screws forming the contact maker in the runway. Then take another piece of wire, connect it to the other runway contact, pass it through the hole in the front, then up the inside and so to the other battery contact.

We now have a circuit that is closed when the two runway screws touch, and is broken when they part, as they do when the runway is in the 'up' position.

The Doors

The doors are held in place with small metal hinges; or stiff paper like the roof hinge will do equally well. Before fixing them, however, put a screw in each at the back near the bottom, and two more on the front side to form door handles. Fig. 1 shows how the elastic is fixed round the two inside screws, and engaged on two others on the inside of the garage walls.

This elastic will need a little adjustment to get just the right length, since much depends on the kind of elastic used. It should be long enough to allow the doors to be pulled shut without undue strain, but short enough to pull the doors right back when the runway releases them.

In time the elastic may stretch, of course, and have to be shortened or replaced. So it is quite a good plan always to leave the doors in the open position when the model is not in use. Then the elastic will last much longer than if always left in the stretched position.

To set the garage for use, the doors are pulled forward and the runway raised until the catch engages behind the doors. The pull of the elastic on the doors holds the runway up in position.

Testing Out

Having fixed the runway in position, we can now try out the arrangement and make such little adjustments as are necessary to ensure the model working

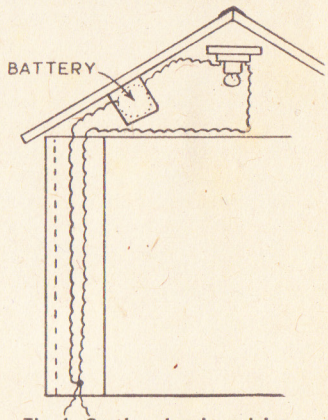


Fig. 4—Section showing wiring

smoothly. Pull the doors shut, then lift up the runway, adjusting the little metal catch until it just engages behind the doors and holds them both closed.

Now press lightly on the runway, as a car would in driving up to the garage doors, and see that when the runway drops the doors are released. It may be that the turned-up edge of the catch needs shortening a little, to allow the doors to pass over it. Check also that the two screws forming the light contact are in their correct positions, so that contact is made when the runway drops.

Finishing Off

Having tested the works we can now finish off the model. Cut a piece of wood 5½ins. by 4½ins. and glue it inside the garage to form a floor, to bring the level up to that of the runway when in the down position. A few experiments should soon bring about the desired result and make running in quite satisfactory.

For the outside, the model can be painted or (what is probably more suitable in this case) papered with imitation bricks and tiles, with the special Dolls' House papers obtainable from Hobbies Ltd. (302)

A simple novelty to make for Christmas is this

TUMBLING CLOWN TOY

WE have frequently been asked to give details of this toy which appeared in these pages some few years ago. It is quite an old-fashioned novelty, which still has a great claim on the amusement side for the children. It will certainly be a source of entertainment to the modern child, and will probably be quite new to thousands of our boys and girls.

As will be seen from the diagrams, the toy consists of a block of wood representing the clown. He is placed at the top of the ladder and upon being released, he turns over and over, down the ladder, catching on to each rung in turn on his descent.

The Clown Block

The toy is by no means difficult to make, nor will it take long to construct. Fig. 1 shows three stages in making the clown block. A piece of wood of 1¼ins. by 1¼ins. section and 3¾ins. long is marked out, as in Fig. 1 (A). Holes, ½in. diameter, are then bored through, as seen in (B) Fig. 1, and finally the block is gripped in the vice and the wedge-shaped pieces cut out with a tenon saw. It is most important to get these openings quite smooth. Bored holes may be rough, so it will be necessary to get busy with the glasspaper.

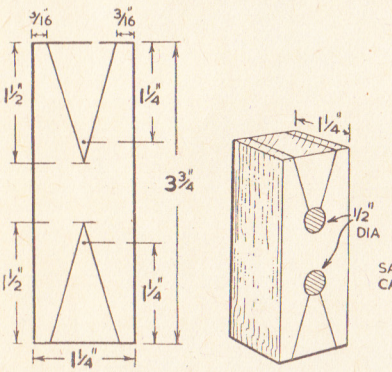


Fig. 1—Marking out, and cutting the clown block

In Fig. 2 we see how the clown is painted on the two plain sides of the wood block.

As many workers find it difficult to draw the human figure, the simple comic one shown should not be too difficult. The proportions are easily drawn by putting lines across the illustration and then redrawing them on the wood and using them as guide lines for the finished outline. The paint used should be in bright colours, a good enamel would be best.

If several of these toys are being made for sale, perhaps, there will be no need to mark out each figure separately. Draw one out in outline on metal or cardboard, making this a template for drawing round in pencil direct on to the wood. A strip of the template material may be left on each end to bend over the wood to hold the former in place while pencilling in the outline (see (T) in Fig. 2).

Fig. 2—The figure

The actual background round the figure, shown by the hatched lines in Fig. 2, should be painted black. Use a small brush for the clown detail, and if a number of them are being done, keep a brush for each colour while working. This will save time and trouble in cleaning the brush between each colour operation.

The ladder is a simple item to make and it can be of almost any length. In fact, the longer it is, the better the effect when the clown is performing. There must, however, be a limit to the length of the ladder if it is required to stand up on a base, as in our sketch of the finished article.

The size of the base and its side brackets can only be got by trial when the ladder length has been decided upon. The sides of the ladder can be of almost any size in section of wood—say, ¾in. by ⅜in. The edges should be smoothed up with glasspaper and the sharp corners taken off.

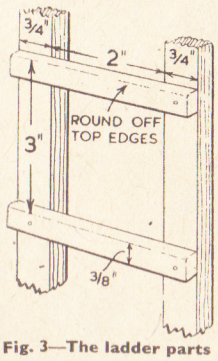
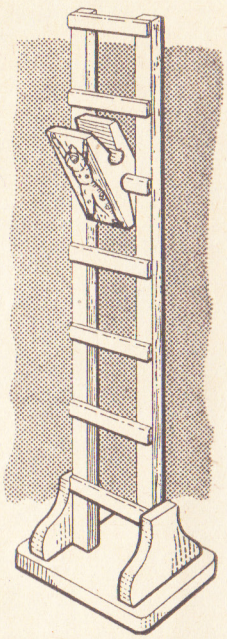


Fig. 3—The ladder parts



The cross steps of the ladder are made from stripwood, ⅜in. wide by about ⅛in. thick. Trim all the pieces to this section accurately, so the figure of the clown falls evenly and smoothly. Also see that the upper edges of the steps are rounded over and made smooth with glasspaper.

Ladder Assembly

Fig. 3 shows exactly how the ladder parts are assembled. Keep the steps quite square with the uprights, and glue and pin them on, using small brass fretpins for the job. Do not forget to prick in the holes beforehand for the pins, to avoid splitting the wood.

The flat base and its side supports should be of ¼in. or ⅜in. wood, firmly nailed and glued together. It must be pointed out here that unless great care is taken to get all the parts accurate, the clown on his descent will occasionally miss his footing and fall off the ladder.

This will also happen if the ladder is not held upright. Follow out the instructions given here, and make any little further adjustments to the steps necessary after testing the clown. Clean the wood thoroughly before applying the paint or enamel

Entertain your friends with these simple
CAN-YOU-DO-IT? TRICKS

TO make a party go well you should always have plenty of 'can you do it'? stunts up your sleeve which can be brought out as and when required. This type of diversion invariably holds the interest for a time and often produces much laughter and fun as the aspirants continually fail to perform the desired action or whatever the trick demands. Here then are some of this kind of diversion.

First we have the mysterious ash. Things have eased off a bit and a few of you are sitting round smoking. 'Can anyone keep the ash on their cigarette till it is smoked right out'? you ask. Everybody starts to smoke most carefully and there is plenty of gaiety as one ash after another tumbles off. Yours, however, sticks out straight and stiff and gradually attention is focussed on how marvellously you are keeping your ash on, and when it is still there at the last puff, amazement knows no bounds.

And the secret? Well, unobserved you ran a very fine needle down the whole length of your cigarette, which has the effect of keeping the ash in position.

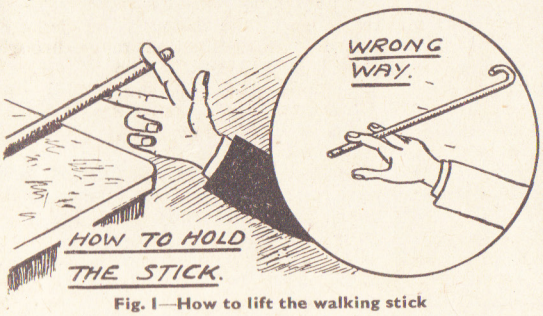


Fig. 1—How to lift the walking stick

Walking Stick Lifting

'Lifting the walking stick' is quite a good stunt. Place a not-too-light walking stick on the table with its ferrule end protruding over the edge. Now you say 'can anyone lift this stick off the table and hold it horizontal in the air with two fingers, the first and second, touching the ferrule end only'? Nearly everyone will try with the fingers as in the inset sketch of Fig. 1, with the result that it is quite impossible to get the stick even off the table, never mind raising and holding it horizontally in the air.

The feat can be performed, however, by turning the hand palm up and fitting the end between the fingers, as shown. The whole weight of the stick is then taken by the second finger which, of course, becomes a rigid bar under the pressure.

Coin Tricks

Two interesting coin 'can-you-do-its' are shown in Fig. 2. In both cases the question is can you flick away the paper or card and still leave the coin in position, in the one trick on the edge of the glass, and in the other still on the finger tip.

Both seemingly impossible feats can be accomplished, the secret lying entirely in the quality of the flick given to the material which should be of a smart nature. Furthermore, the paper strip, which is ½in. wide and about 1ft. long, is held so that the coin is as near as possible horizontal, while the card for the finger trick is 1½ins. square and of a smooth surface.

It is good to practise both these stunts before bringing them out so that you can show doubters that they can really be done. The blow is given to the paper strip with the edge of the hand and to the card by a jerk of the first finger of the otherhand. Both these tricks are good laugh raisers, as coins continually fall about and have to be retrieved.

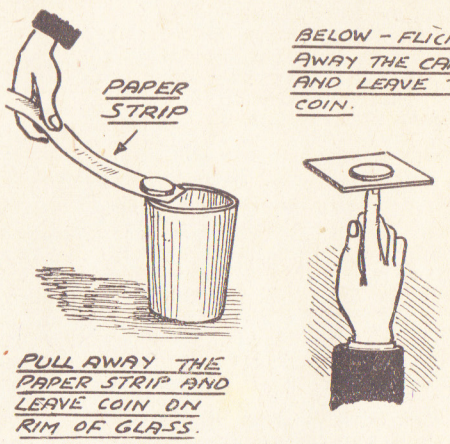


Fig. 2—Two simple coin tricks

With Elastic Band

'Shedding the elastic band' should definitely be tried sometime during the evening. Here you demonstrate to the guests exactly what they have to do. Making sure they can all see what is being done you hold a band on the first fingers, as Fig. 3, and then twirl it rapidly round by rotating the fingers, one round the other, as per the arrow. Suddenly you bring the finger tips together and the band falls to the floor.

The guests now try but the band always remains threaded over one or other of the fingers. It is the sort of game people like to keep on trying and it is always amusing in itself to see a lot of people sitting twirling their fingers—for you can hand out quite a lot of bands together.

To get the band to fall clear the secret lies in first, and for a fraction of a second only, closing the left finger and thumb and the right finger and thumb together inside the circle of the elastic, and then quickly bringing the right thumb to the left forefinger and the right forefinger to the left thumb. The hands brought thus in contact, it will be found that the band automatically falls off.

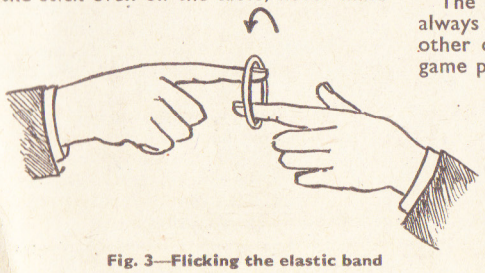


Fig. 3—Flicking the elastic band

Acrobats

A dexterity 'can you do it' is to crawl round a chair, without touching the ground. That is the competitor starts seated on the chair with his feet raised and after crawling right round the back, must end up once more seated. It can be done, and it is all a question of balance. Most people fall off or topple the chair over when half way round.

Lifting a chair by one leg only, with one hand only, and that grasping the leg at its floor end calls for both strength of wrist and dexterity, but quite a lot of the latter for there is everything in getting well down on your knees beside the chair before attempting the lift. Of course, choose a suitable chair for this trick and not one that is impossibly heavy.

The Falling Coin

But back to something less strenuous, though none the less interesting. A good test for the eye and general reactions is the catching of a falling coin before it reaches the floor. Bring back the arm till the hand touches the ear which will mean that the elbow is sticking out in front. On the very tip place a coin.

Then bring the hand sharply forward, which, of course, throws the coin off, your job being to catch it before it reaches the ground with that hand. Most people can do this after a little practice, but the first tries are amusing.

The thing is to aim for a point just below the elbow and not out in front, as one might imagine would be necessary.

Another good coin trick is to place two coins on the back of the hand, one

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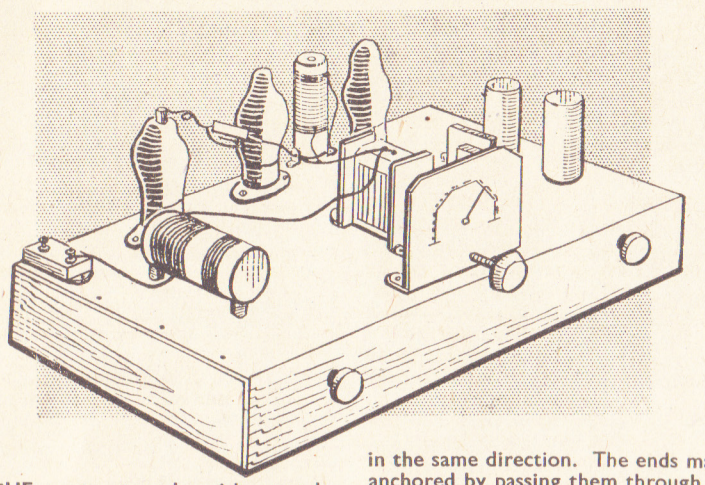
How the radio enthusiast can build himself

AN ALL-MAINS THREE



THE constructor who wishes to take advantage of mains supplies should experience no difficulty in building the receiver described herewith, which will give excellent results, though unnecessary complication has been avoided. It is suitable for any A.C. or D.C. mains of up to 250 volts, and the circuit is given in Fig. 1.

Two pentodes are employed for detection and output, with the third valve providing rectification in order to obtain the high tension current from the mains. The grid bias necessary is obtained by the voltage drop across the 440 ohm resistor, and the valve heaters are operated directly from the mains.

Tuning Coil Construction

Any ordinary ready-made Medium Wave, or Long and Medium Wave, tuning coil can be employed, if to hand. If one is to be wound, this can be done from Fig. 2, 32 S.W.G. enamelled wire being employed, and an insulated tube about 1¾ins. in diameter. The smaller winding, used for reaction, consists of 40 turns, side by side. The larger winding consists of 75 turns, also side by side.

A space of about ¼in. is left between the coils, as shown, and all turns must be in the same direction. The ends may be anchored by passing them through pairs of small holes, and they should be left long enough to reach the various components to which they will be connected. The aerial tapping is at approximately the centre of the larger coil.

Such a coil will function as well as a ready-made one, and can be mounted by small bolts, with spacing washers between the coil former and chassis.

Chassis Construction

It is of advantage to make this from wood, to avoid dangers of short circuits or shocks which might arise with a metal chassis. Three-ply is suitable for top, front and rear, with slightly thicker wood for the side runners. A chassis 7ins. by 9ins. by 2ins. deep is convenient, and no difficulty will arise in making this.

The front runner is drilled for the on-off switch and reaction condenser. The former is of the rotary type, so that the knobs match. The back runner is fitted with a small socket strip for the speaker connections. A ¼in. hole is also drilled here for the mains supply leads.

The tuning condenser and reduction drive are bolted on the top of the chassis, in a central position. Many different types of drives are available, and that chosen can depend upon personal preference. As ample current is available, it is advantageous to fit a dial-light. Besides its normal purpose, this will also show when the set is switched on.

Three holes are cut for the valve-holders. The best size here will depend upon the style of holder, but holes about 1in. in diameter will normally be suitable. Bolt the holders with the key-ways all facing to the right, as in Fig. 3.

The mains dropper, which will become quite hot, is fixed at the extreme rear edge of the chassis. The choke is bolted down, and its leads taken through small holes (marked 'X' and 'Y' in Fig. 3 for identification). If the 8 mfd. condensers are circular, with projecting tags, these can be fitted over holes about ⅜in. in diameter.

Some condensers have a bush and large nut; others employ small fixing feet. Cardboard condensers will normally have coloured flexible leads (red will be positive), and it may be necessary to devise a small bracket from thin metal, to hold these. The type of condenser does not matter, provided it is of the capacity and voltage-working shown in the Component List.

Above-Chassis Wiring

All this is shown in Fig. 3. The detector will have a top cap (the grid) and a

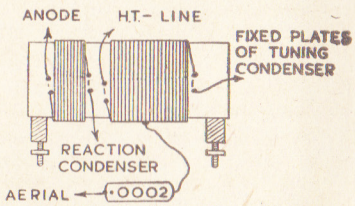


Fig. 2—The tuning coil

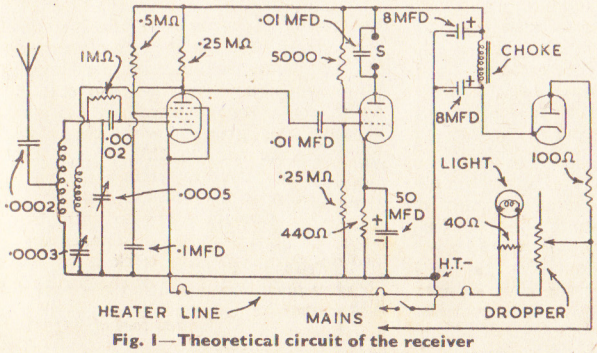


Fig. 1—Theoretical circuit of the receiver

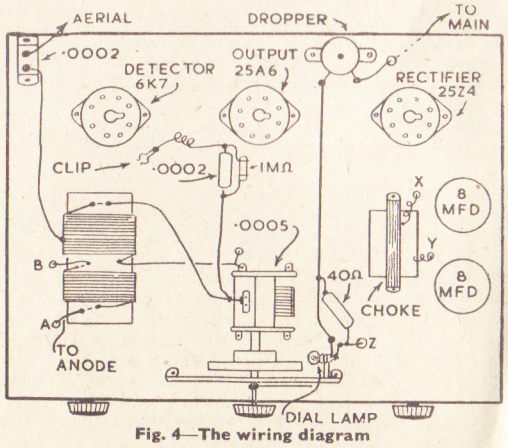


Fig. 4—The wiring diagram

short lead goes from this to the ·0002 mfd. condenser and 1 megohm grid-leak, which are supported in the wiring. The ·0002 mfd. aerial condenser provides a point for the aerial to be connected. It should not be omitted because it prevents mains voltages reaching the aerial.

The mains dropper will normally have two fixed and one movable clip. One connection is taken to one fixed clip; the second connection to the movable clip. The second fixed clip and any other movable clips which may be present are ignored. Insulated wire should be used for all connections. The mains-supply leads should be of good twin flex, and ending in a proper wall plug or adapter, to suit the supply source socket.

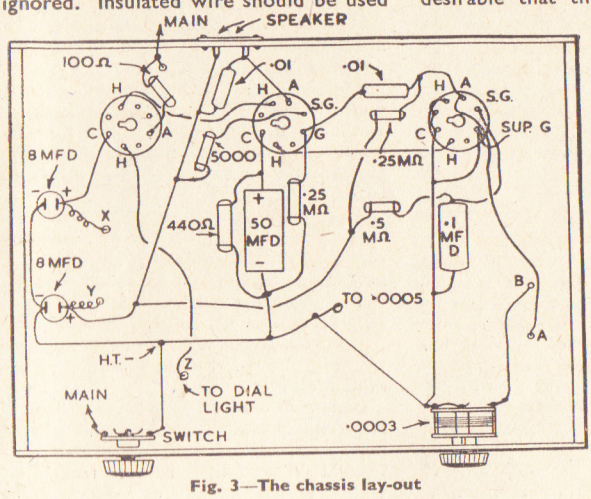


Fig. 3—The chassis lay-out

Wiring Below the Chassis

By following Fig. 4 the remainder of the wiring can be completed. Note that the two 8 mfd. condensers and the 50 mfd. bias condenser have the polarity indicated, and this must be followed. The other condensers and all resistors can be connected either way round. Keep all grid and anode leads as short as possible, and away from other leads, especially those carrying A.C. or slight humming may be induced.

Only a few leads pass through the chassis. Leads (X) and (Y) are from the choke. A lead goes from the 100 ohm resistor and main to the dropper. A further lead goes from the H.T. negative line to the moving plates (frame) of the tuning condenser. An examination of Figs. 3 and 4 will make these points quite clear. With the detector valve-holder three tags (heater, metallising and cathode) are all joined together.

Important Notes

As with all 'Universal' or A.C./D.C. receivers, one mains lead becomes the H.T. negative line, and, in consequence, is in contact with all components connected to this. It is, therefore, desirable that the receiver should be incorporated in a proper cabinet, so that no bare parts, including the framework of the tuning dial, if of metal, can be touched. Before making any alterations, the set should be disconnected by withdrawing the mains plug.

In normal circumstances no shocks will be felt even if parts connected to the mains are touched. However, if the user is standing on a conductive floor, a tingling, or more powerful shock, may be felt. It is, therefore, best to avoid touching metal parts when the set is plugged in to the mains.

One mains lead is normally at lower potential, in respect to earth, and this is frequently marked on the plug or socket. If so, it is preferable that this point be the one going to the receiver switch, as in some cases there will be less chance of any hum arising. If the low-potential socket is not known, try the effect of reversing the mains-supply leads to the receiver.

No earth is normally required. If one is employed a 500 V. ·05 mfd. condenser should be wired in the earth lead, which is taken to the H.T. negative line of the set.

Adjusting the Receiver

Set the dropper clip so that about $\frac{7}{8}$th of the element is in circuit. Connect a moving-coil speaker with transformer for mains pentode, and also the aerial. After switching on the dial, light should light up immediately, but about 45 seconds will pass before the set reaches normal operating temperature. If the period is longer, withdraw the mains plug and move the dropper clip so that less resistance element is in circuit.

When this clip is correctly adjusted, the set should reach normal operating temperature in about 45 seconds, as mentioned, and the clip can then be screwed tight. (If a suitable meter is available, adjust the clip until the heater voltage, as read on either output or rectifier valve sockets, is 25).

Tuning and reaction controls are used in the usual way, and the dropper clip will only need further adjustment if the receiver is taken to a mains supply of different voltage. In the case of D.C. mains, no signals will be heard if the polarity is incorrect, so it will be necessary to reverse the mains plug in the supply socket, or change over the receiver leads.

The receiver can operate a large speaker well, and for best results it is absolutely essential that the latter be fitted in a cabinet, or secured to a baffle-board. Finally, it should be noted that the receiver cannot operate with no dial-light. If a dial-light is not required, omit it and the 40 ohm resistor, taking a lead directly from the dropper to the rectifier heater.

COMPONENT LIST

Three octal valveholders.
·0005 mfd. tuning condenser with reduction and knob.
·0003 mfd. reaction condenser with knob.
On-Off switch (Mains Type).
Two 8 mfd. 350 volt-working smoothing condensers.
50 mfd. 50 volt-working bias condenser.
·3 amp., 800 ohm mains dropper.
·0002 mfd. mica aerial condenser. Ditto, grid condenser.
·01 mfd. mica coupling condenser. ·01 mfd. paper condenser for speaker tone-control. ·1 mfd. 250 V. paper condenser.
Two ·25 megohm, ·5 megohm, and 1 megohm resistors ($\frac{1}{2}$ to 1 watt).
100 ohm, 440 ohm and 5,000 ohm 1 watt resistors.
40 ohm 1 watt resistor and 6·3 volt ·3 amp. dial light with insulated fixture.
Small mains smoothing choke.
6K7, 25A6, and 25Z4 valves. Wire and former for coil.

Tricks—(*Continued from page* 164)

just above the knuckles and the other about 2ins. higher and then sharply flinging them into the air with an upward jerk of the hand, catch them both with, of course, the same hand. Try first with one coin if two seems impossible and then go on to two. Some persons who are clever at this trick can retrieve even three coins placed between the knuckles and the wrist.

For table-top 'can-you-do-it' tricks we have the building of a tower with playing cards, the putting of five matches on the table in such a way that they each touch every other one, and the placing of two florins, two sixpences and one shilling in such a way that each coin touches at some point every other coin. These are all good stunts and take just about the right amount of effort to get them done.

Well there you get the idea. There are quite a lot of these stunts but unless you give them some thought one can never think of them when wanted, so starting with these given here, keep your eyes and ears open and make a list which will be ready at hand when your party comes along.

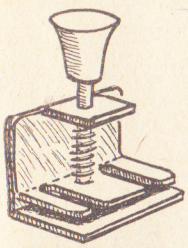
As a general piece of advice, never let one trick go on too long. If it seems just a bit too hard or is not raising the desired interest, whip it on one side and bring out the next stunt from your bag.

Make your personal greetings by using this
NOVELTY CARD FINISH

NO matter how nice a 'shop bought' Christmas card or calendar, it never quite has the individuality of one made by yourself. There are a number of ways by which these things can be produced at home, of course, but here is a really novel finish for both the ordinary greeting card or greeting calendar that you might like to try this year, the novelty lying in the binding of the edges.

Material Needed

Required is some cardette or parchment of suitable tone to go with the pictures you intend to use, and a good amount of plastic thread. Also needed is one of those very small thumb punches. Pictures appear on both the cards and calendars and it is nice if you can use your own summer snaps. Tiny photographs are not much use, but a well filled 3¼in. by 2¼in. print is quite suitable for the items suggested.



The type of small punch needed

If the pictures you wish to use are black and white, the material used for the card or calendar should be white or silver-grey. Should they be a sepia, then a whole range of yellows and browns will do. Never mount a black and white print on brown card, as the effect is not at all nice.

Should you not be using your own print but coloured pictures from another source, then a card which tones must be found by trial and error, but broadly a delicately tinted picture needs a delicately tinted mount, while a heavily coloured one looks better on a heavily coloured base.

A vertical greetings card can be made for upright pictures, but a horizontal one for pictures wider than they are high. Should your camera give prints of the 2¼ins. by 2¼ins. square format, then vertical cards can be used by setting the print rather above the centre point. On the other hand, square cards can be made, but the square snap does not fit well into a horizontal card. In getting a pleasing result there is far more in correct mounting than it might first appear.

Single Sheet Cards

Having obtained the prints and card, the latter being procurable at most printers in sheets of about 2ft. square, work can start. Use a sharp blade for the cutting, with a steel edge for guidance, and carry out the process on a thicker piece of material, so that a good clean cut can be obtained.

As can be seen by the sketch, each greetings card consists of a single sheet folded about its middle. For an untrimmed snapshot of 3¼ins. by 2¼ins., the card size should be 5½ins. by 4¼ins. This means cutting from the main sheet a rectangle of 10½ins. by 4¼ins. Fold so the two halves lie perfectly over one another. For a vertical card the first rectangle is 8½ins. by 5¼ins.

Next, before mounting the print, punch the holes for the plastic binding. For quick and accurate punching, one of the tiny thumb presses now on the market is essential, as this can be rapidly slipped along the edge of the rectangle, punching as you go. Equal distancing of the holes being assured by always setting the punch so that the last hole made comes in a slot on the press. The distance of the holes in from the edge is automatically constant.

The cumbersome pliers punch is useless for a job like this when long lines of punch holes have to be quickly made. A thumb punch costs about 4/-.

Mounting and Binding

With the holes made, now mount the pictures a trifle above centre, otherwise they have rather a dropped appearance. Use a paste mountant, as this is not damp in any way and holds the picture firmly at the first contact. Most gums are too moist.

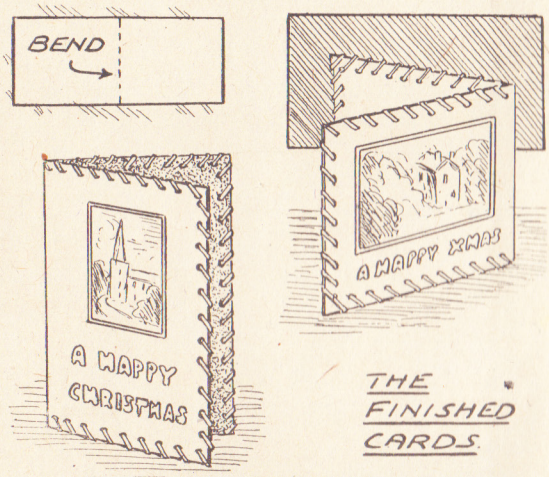
Still before the final binding, add a greeting below the picture and the word 'From', with a dotted line running from it in the centre. 'A Happy Xmas' should be done in the type of letter shown, as even a person with no artistic ability cannot go wrong with the outlines.

Coloured Lettering

After these have been put in, the letters are all painted in solid with a flat colour, as red, green or yellow. Black should only be used when the whole motive of the card is black and white. On a dark brown card, gold paint looks well. The 'From' on the inside of the back of the card can also be in these stone letters or squarely printed.

Lastly comes the binding. Plastic thread can be bought at most fancy shops and chain stores in a whole range of colours. Start at one corner of the card, leaving the end loose, and work steadily hole by hole right round till the same corner is reached. Here join the ends by a small stitch. When the binding is complete, the card is finished, and it should now be kept under slight pressure till required.

An easy style of lettering to use



The completed cards with their bound edges

Photograph Pictures

As well as Christmas cards, very good calendars can be made by this binding method, your own photographs again being used if desired. As the finished article will hang on a wall, a bigger surround to the picture can be given, and a 3¼ins. by 2¼ins. print can well be used on a rectangle of card 5½ins. wide by 7ins. deep—the picture being horizontal. For vertical photographs or other pictures, a rectangle 5ins. by 8ins. gives a well-proportioned appearance.

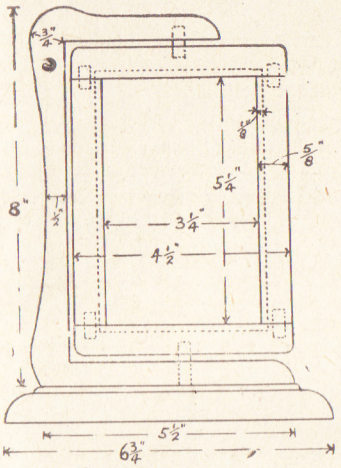
(*Continued foot of page 168*)

Show two postcard pictures in this swing

DOUBLE-SIDED FRAME

THE photo frame has undergone great changes during recent years. Many striking designs have appeared, ranging from the ultra plain to those very skilfully adorned with wood carving. The novel photo frame illustrated and described on this page, while being quite plain is, nevertheless, really very attractive, and makes a useful addition to the home furnishings.

By having the actual frame pivoted at the top and bottom, it is possible to display two different photos alternatively. The construction of the frame is quite easy and if carefully made,



Section of parts with the dowels shown dotted

would form an ideal Christmas present that is bound to receive a hearty welcome.

The sizes given are for the ever popular post card, but it is an easy matter to alter the proportions to other useful sizes.

Suitable Wood

Mahogany or walnut are good woods to use and are not difficult to work with. An added charm is obtained by using two entirely different woods. The frame can be dark, such as walnut, while the stand is a light wood like sycamore.

Commence by making the frame, the wood of which is $\frac{3}{8}$in. square. A piece 21ins. long will be sufficient for all four sides and it would be as well to make the groove for the glasses before cutting it up. We will assume that two pieces of thin glass and the two photos will not exceed $\frac{1}{4}$in. in thickness, which is the width to cut the groove. It is not necessary to make it any deeper than $\frac{1}{8}$in., provided that the bottom of the groove is cut nice and square and even.

Dowelled Corners

Now cut the strip up into the correct lengths—two pieces $5\frac{1}{4}$ins. for the sides and two pieces $4\frac{1}{2}$ins. for top and bottom. These four pieces are not mitred as is usual for picture frames, but are held together with four dowels, as shown in the sketch.

Be careful to measure up and make all these a very good fit, more especially those in the top. The bottom bar and the two sides can be glued together, but the top is made to lift off, so that the glasses can be taken out and the photos changed if required. One side of each dowel can be glued in and it does not matter whether it is in the side pieces or in the top bar.

It will be found that the glass groove is not wanted right at the ends of the top and bottom bars. Therefore, before fitting the dowels, glue in a piece of wood $\frac{1}{4}$in. by $\frac{1}{8}$in. and $\frac{1}{8}$in. long. If you do not like this method, you can cut the grooves in the top and bottom bars separately, leaving each end solid, but this is much more difficult.

When the frame is fitted together, all the edges are rounded off with glasspaper. The four corners may also receive this treatment if desired.

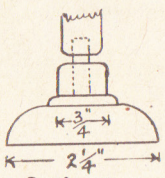
The Stand

Now we are ready to make the stand to hold this frame, for which only two pieces of wood are used. The top piece, shaped like a square letter C, is cut from the solid, extra strength being given at the corners by leaving the wood somewhat thicker here.

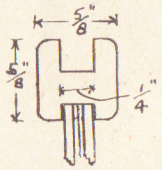
It is not necessary to keep strictly to the design shown so long as the gap between the frame and stand is maintained at about $\frac{1}{8}$in. A piece of wood 8ins. long, $5\frac{1}{2}$ins. wide and $\frac{3}{4}$in. thick is needed. No difficulty should be experienced if a thick coarse fretsaw is used to cut this.

The three inside edges which are next to the photo frame are finished quite flat by using a piece of glasspaper folded round a strip of wood. The opposite outside edges at the top and side should be glasspapered to a nice half-round surface in a similar manner. The bottom edge, however, is left flat where it will be screwed on to the base strip.

Carefully measure the positions and drill two holes for the $\frac{1}{4}$in. dowel rod pivots, the top one is drilled only half way through and then glued in. The hole in the bottom is drilled right through and the dowel cut so that when



Section at base



Section showing frame side

pushed into the frame, it is level with the baseboard which holds it in place.

By removing this pivot the frame can be taken out for changing the photos when required.

Baseboard

The baseboard is $6\frac{3}{4}$ins. long, $2\frac{1}{4}$ins. wide and $\frac{3}{4}$in. thick. Should any trouble be experienced in cutting the moulding, the base can be finished off with a straight bevel, but this would spoil the design by introducing sharp edges. In such a case both the frame and the C shaped mount should also have sharp edges instead of the rounded ones in order to complete the harmony of design.

The baseboard is screwed on to the C piece by two wood screws inserted from the underside.

For a nice finish there is nothing better than french polish, provided the wood has been well glasspapered to secure a smooth surface. Some very pleasing results can be obtained by using enamels, which are now on the market in a variety of delightful shades.

(300)

Card Finish—(*Continued from page* 167)

Calendars always require some sort of hanging tab and a simple one can be made at the mid-top point with a short length of coloured 'baby ribbon' held to the back with a wide strip of strong adhesive paper. Or, of course, a hanging tab could be fashioned from the plastic thread used for the edge binding.

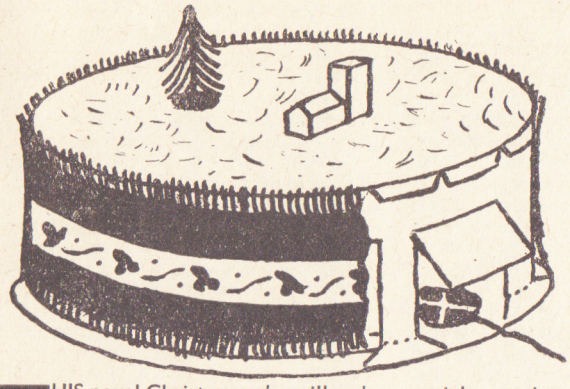
In all cases the actual calendar is pasted in a central position beneath the picture. The method of hanging the booklet below the card (a usual practice) does not look well with bound calendars. Incidentally suitable calendars, measuring about $2\frac{3}{4}$ins. by $1\frac{1}{2}$ins. and in a whole range of colours, can be obtained from any stationers, ready for pasting into position. They only cost a penny or so.

With regard to the binding of the calendars, this is just the same as for the cards, a start being made at one corner and a final stitch holding all firm when the corner is once more reached.

Finally, while it is important with both, especial care should be given with the calendars to get the colours of the print, mount and binding to tone. Thus a pleasing choice is a sepia print, sun-coloured mount and sepia binding. But there are plenty of other happy mixtures.

Novelty and presents for your friends from this

CHRISTMAS GIFT CAKE



THIS novel Christmas cake will make a nice decoration for your Christmas or New Year party, and also pleasantly surprise your friends and relatives when they find that it contains paper hats, mottos, and presents.

This 'cake' will not take you long to make, and the cost will be less than the usual snowman or Yule log, containing presents that one can buy in the shops at Christmas time. Of course, you have the added advantage of being able to vary the value of your gifts inside the cake, according to your pocket.

Simple Materials

All the materials that you need are a sheet of stout cartridge paper (preferably white), 25ins. by 20ins. This can be obtained from any good stationer; a bottle of paste or Gloy; an 11in. cake board (if necessary a piece of thick cardboard cut to an 11in. diameter circle will do); a cake band, a small quantity of cotton wool, a couple of small decorations for the top of the cake, such as a Father Christmas or a Fir tree, and a sharp pair of scissors.

The cake is made to contain eight presents, in such a manner that when the cake band is removed, each guest can pull a piece of string and the gifts will be drawn out from the cake, through small flaps cut from around the side. These, of course, remain hidden until the cake band is removed.

The Top

The top of the cake is a $10\frac{3}{4}$ins. circle of cartridge paper, with an inner circle of $10\frac{1}{4}$ins. Cut round the outer edge of the circle, then cut small V-shaped pieces away to form glue tabs (see Fig 1). Then fold these tabs back to the inner pencil line.

Cut the centre pillar as shown in Fig. 2, and fold along dotted lines, as shown. This pillar is then glued to the centre of the cake board. It should be noted that it does not fix to the top of the cake but only supports the weight, and prevents the gifts from sliding from side to side of the cake.

Side

The side is cut as shown in Fig. 3. Cut along black lines and fold on dotted lines, with the exception of line H.J., which serves as a glue overlapping mark to make a circular band of paper. The length of the side is 33ins., composed of eight sections, as shown in Fig. 3.

Unless you are fortunate in obtaining a piece of paper this length, it will be necessary to make the side by cutting a length $24\frac{1}{2}$ins. long (six sections, plus $\frac{1}{2}$in. for overlap) and adding a further two sections of $8\frac{1}{2}$ins. (again a $\frac{1}{2}$in. allowed for overlap).

Cut eight portions for the gift divisions, as shown in Fig. 4. Fold in half down the line A.B., then fold again edges C.E. towards the centre to make shape indicated.

Construction of Cake

Having made the circular side 33ins. long, place inside the circular top and glue tab edges round the top edge. Bend the eight tabs of the side marked (A) outwards, and glue to the cake base which already has the centre pillar glued to the centre. We now have completed a drum shape (see Fig. 5).

Raise the eight flaps round the side and glue the eight gift divisions to the cake board, behind each leg of the side and running into the centre pillar. This operation will call for careful manipulation. The cotton wool is now glued in a thin layer over the top of the cake and the Father Christmas or Fir Tree, etc., glued in position.

The Gifts

To complete the cake, take your eight gifts, wrap them in Christmas paper, keeping them to a neat size, so they will easily pass through the flap. Tie a short length of string to each package, so it projects over the edge of the cake board and tie your cake band in position around the cake. Your Christmas novelty is then finished.

Make the whole thing as firmly as possible so you can keep it for use on another Christmas. Make it look as realistic as possible without having decorations too elaborate. Gifts must, of course, be small enough to pass easily through the apertures in the side.

The Editor can supply the name of a firm from which caps, mottoes and inexpensive gifts can be obtained. (322)

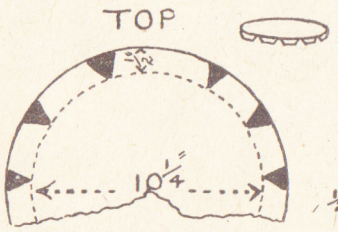


Fig. 1— Marking out the top

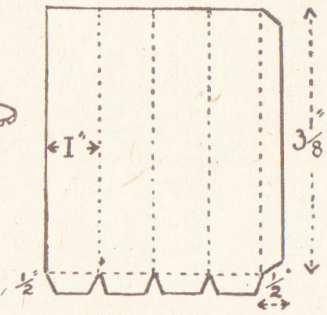


Fig. 2—The central pillar

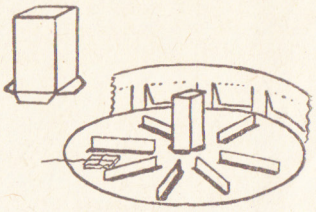


Fig. 5—Interior construction

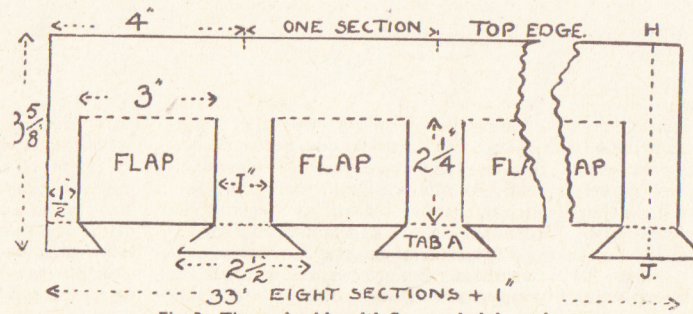


Fig. 3—The main side with flaps and gluing tabs

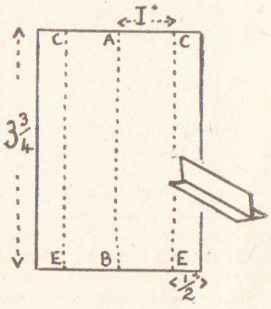


Fig. 4—The partition pieces

Hints on securing rigidity and safety in

FIXING THE XMAS TREE

IF your Christmas tree is small there will be little difficulty in fixing it firmly in a container of one sort or another, but if this year the Yule-tide fir is to be of some size, the question of safe anchorage may not be quite so easy—and big trees must be safely erected, otherwise they can become a danger.

An ideal base for even quite a large specimen is one of those big forcing pots used by market gardeners. Filled with soil these are heavy and solid, but it is not everyone who can procure a pot of this kind and other things then have to be pressed into service.

An apple barrel from the greengrocer or a garden tub (as used for shrubs) make good containers, as will smaller terra-cotta flower pots (for smaller trees). But where none of these things can be obtained, then an ordinary box must be used.

In all cases the container should be filled with either damp soil or clay, the tree being 'planted' in this. Clay is better as it gives a greater weight and can be more satisfactorily pressed round the stem.

Additional sturdiness is obtained by fitting some sort of bar across the top of container to which the stem is attached or into which it slips. This extra support can be a frame as (A) Fig. 1 or a board on edge to which the stem is screwed (B), or again a flat board as (C) with a hole in the centre. In all cases the cross pieces must be jammed tightly in the top of the pot, barrel or box.

If desired, a second piece can be put at the bottom of the container as (D). This gives a really good anchorage, but it is not necessary if the stem of the tree is long and clay is used for the filling.

When a box has perforce to be used, it may be found rather light, but standing firmness can be given by fixing on a cross-base as Fig. 2. For rapid making, the cross should be of at least 1in. thick strip, half-jointed at the centre so that the box lies flatly on top. Screws into the box at suitable points will make everything secure.

When a tree is very tall it is always best to have some sort of guy wires at the top to a picture rail or other fastening in the wall, as this gives the whole tree a final firmness. You can thus go ahead putting on presents and decorations with the greatest confidence, all fear of the steadily increasing weight causing sagging or leaning over being completely banished.

If in a corner, the guy wire fastened to the stem can go across at an angle as (b) Fig. 3. If it is against a flat wall, the wire should come from the picture rail, round the tree and back to the rail as (a).

If in the middle of the room, then a single wire right across to either side will give all the safety necessary—the wire in this case being camouflaged with coloured paper.

Should you wish to break right away from the conventional pot, barrel or box container and have your tree growing out of a cone-like bank, then the frame as shown in Fig. 1 (E) can readily be made, the size of the members depending on the size of the tree.

The sloping pieces (a) need not be of heavy material, the main thing being that the cross of the base must be sufficiently wide to give good standing. The collar (b) which takes the stem at the top must be quite a sturdy block, not less than 1in. thick, while the corresponding piece at the bottom should also be of suitable thickness, though not having to take screws into its edges.

Surrounded by green cloth, this sort of a stand forms a solid-looking cone out of which the tree seemingly sprouts, giving a novel and unusual appearance. This type of container is seen to advantage when the tree is to be viewed from some little distance—as, say, on a stage or at the end of a hall.

A word about making the tree itself look its best. The trouble with many of the present-day 'tops' is that they are rather limp. The boughs easily sag, while the spines themselves appear to have little body. However, things can be helped to a certain extent by lashing two pieces of wood to the stem about half way up, at right-angles to each other and at right-angles to the stem, thus forming a simple horizontal cross. Fig. 4 shows the idea.

The use of this arrangement is that weak boughs beneath can be wired to it, so giving greater rigidity to the whole tree, and the bars can be made to take the weight of heavier decorations. Camouflaging of these extra pieces with green paper and dabs of cotton wool is quite easy. Of course, the cross-pieces must be lashed very rigidly to the stem, but this is not hard with the standard diagonal lashing used in bridge building. Care must be taken when fitting not to damage the tree, the boughs being gently parted and held to one side as the tying is effected.

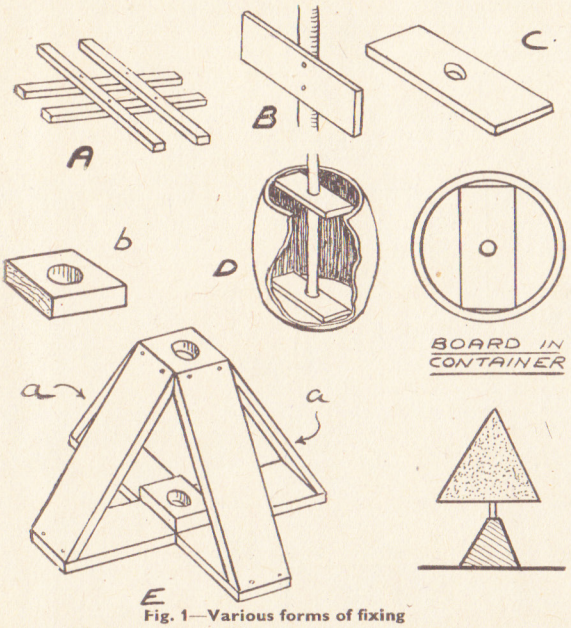


Fig. 1—Various forms of fixing

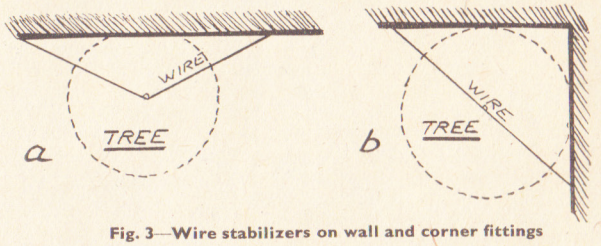


Fig. 3—Wire stabilizers on wall and corner fittings

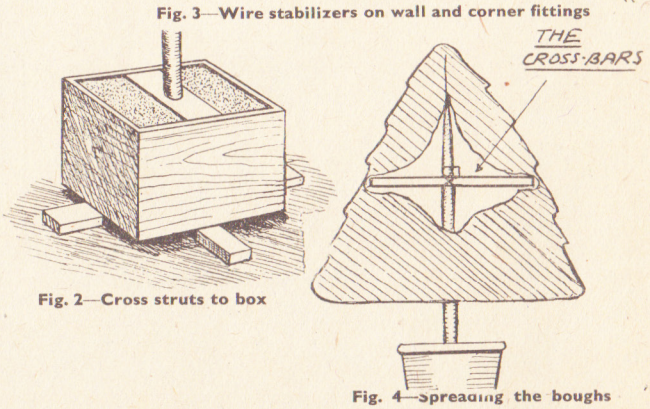


Fig. 2—Cross struts to box

Fig. 4—Spreading the boughs

Books to Read!

A review of interesting books for craftsmen which have been recently published. Obtainable through newsagents or booksellers or direct from the publishers mentioned.

The Home Handyman

by F. Lockwood

HOW many times is the home handyman at a loss to know just how to undertake the job requested of him. It is probably a simple thing if he only knows the way, and one which hardly seems worth calling in an expensive professional tradesman. Well, here is the book he wants and which will save him its cost of 5/- many times over. About loose knife handles, remaking a mattress, renovating pictures, book repairs, sharpening scissors, etc., are only a few of the hundreds of jobs the average fellow about the house is asked to do. It even covers subjects like repairing watches, re-stringing tennis racquets, overhauling sewing machines, etc. The book is fully indexed, with clear type and drawings, bound in strong linen cover to withstand frequent use.

Published by Newnes and Pearson Ltd., Southampton Street, Strand, London, W.C.2—Price 5/-

* * *

Locomotive Body Construction

by Ernest F. Carter

THE layman would hardly think a subject such as this could warrant the preparation of a 60-page book, but every keen railway modeller will agree that it is a most helpful piece of work essential to those whose aim is realism and accuracy. Mr. Carter who is a contributor to our own pages, is acknowledged an authority on such matters. Apart from which he has a pleasing, helpful method of explanation which reduces the most technical business to the knowledge and ability almost of the beginner. The use of eyes and pencil in everyday observation on railway matters is strongly put forward, even apart from the use of tools and materials to bring about the desired result.

Published by Percival Marshall & Co. Ltd., 23 Great Queen Street, London, W.C.2—Price 3/-

* * *

Your Textile Printing

by Evelyn Brooks

OUR recent articles on silk screen printing have proved how increasingly popular this hobby has become. All kinds of fabric printing can be undertaken, for almost every room in the house, apart from personal adornment. The author deals with the whole processes involved and the photographs of her own work prove the ability to show others and the wonderfully practical results which can be obtained. The chapters deal with methods, tools preparation, apparatus, materials and equipment and the whole book is generously interspersed with diagrams and drawings which explain points clearly for the merest beginner. Apart from the practical side there is an interesting chapter on the history of fabric printing where we learn that this type of craftsmanship, far from being a modern art, was practised by the Egyptians in the 5th century, whilst interesting examples of patterned cloth are represented on the wall of a tomb about 21,000 B.C.

Published by The Sylvan Press Ltd., 24 Museum Street, London, W.C.1—Price 8/6

* * *

Build your own Match Fishing Rod

by G. Lawton Moss

SO many readers follow our periodical articles on Fishing that this book is bound to appeal. It is, perhaps, the ambition of every fisherman, not only to land the best weight in the match event, but to do it with a rod which is worth using because he made it to suit his own needs and fancies. Bought rods, too, are very expensive, but following these details you have made one for yourself to all your requirements—easy to manipulate, strong, light, well balanced, with a quick action in the tip. What more could you want? Whilst termed a match rod, you will have something which can be used also for ordinary everyday fishing.

Published by The Technical Press Ltd., Gloucester Road, Kingston Hill, Surrey—Price 4/6

* * *

Furniture Designs

by Charles H. Hayward

THIS large, well bound and printed book is just the work for the experienced amateur carpenter. It contains no more than can be dealt with by the home craftsman who has and can handle the tools found in a good workshop. The requirements for each room are dealt with in turn, and detailed constructional advice given on each article. Beyond that there are scale elevations, full drawings and details, cutting lists and material advice, for every subject mentioned. There are large pieces of furniture for living rooms and bed rooms, there are incidental accessories for kitchen and hall. Construction is simple and straightforward with the necessary room for a carpentry bench and a good range of tools.

Published by Evan Bros., Ltd., Montague House, Russell Square, London, W.C.1—Price 10/6

* * *

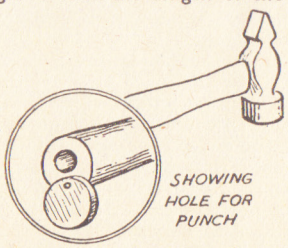
Lampshade Making

by F. J. Christopher

READERS are constantly writing to us for help on this subject, and we are now happy to recommend this little book for their guidance. The advice given is from a practical source, for Mr. Christopher is an experienced instructor and demonstrator, and there is much helpful advice here, whether you are merely making one or two shades for your own home or propose undertaking the work as a commercial venture for selling among your friends. The work is well worth trying, in view of the very high prices for the manufactured articles, apart from the pleasure of the craftsmanship enjoyed. All points of the work are dealt with from material and tools to shapes, frames, construction, finish and uses. Altogether an excellent book for the home craftsman who wants

Punch Holder

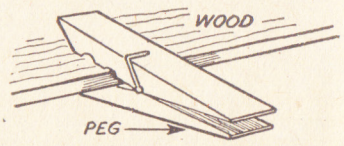
THE hammer and nail punch are two tools nearly always needed, and you can easily keep them together by the simple means illustrated. Drill a hole into the handle of the hammer deep enough to take the length of the drill after having cut off a short length to form a lid. Or, of course, a small circle of tin can be nailed on instead.



SHOWING HOLE FOR PUNCH

A Painting Clip

WHEN you want to paint both sides of a piece of wood, you find it hard because your fingers may damage the paint of one side. All you have to do is to take a small clothes peg and let it grip the wood just as the picture shows, and you find it easy to paint.



to be practical and original in his efforts. *Published by W. & G. Foyle, Charing Cross Road, London, W.C.—Price 2/6*

* * *

Rubber Motors

by R. H. Warring

ANY of our readers keenly interested in constructing and flying model aeroplanes will find ample repayment for the purchase and perusal of this book. It is written by an author who is recognized as an expert, whilst its contents cover all the beginner and experienced flier need know. There are chapters on rubber itself, its function and construction for driving purposes, how to fit, test and trim, with charts and table to prove all that they are required to do to the amateur. Photographs are on almost every page, showing some practical uses or some of the well known authorities on model work with some of their own planes.

Published by Harborough Publications, The Aerodrome, Billington Road, Stanbridge, Near Leighton Buzzard—Price 3/6

* * *

Electro Plating for the Amateur

by L. Warburton

WE are particularly pleased to learn of the publication of such a book as this, because we received quite a number of letters from readers who are anxious to try their hand at the work. We have assumed, of course, that those readers are wise enough and old enough to do the work carefully and realize the need for caution with the acids. But this book puts them entirely wise, and covers the whole subject in simple and progressive manner. As the author says, the processes are not adaptations of commercial and highly expensive or technical ones, but the outcome of his own extensive experiments over many years. Small scale electroplating has a fascination for many workers in metal, and here is how they can do it. The type of apparatus required, the tank, preparation, and, finally, actual operation are all dealt with and additions, diagrams and tables provided where necessary.

Published by Percival Marshall & Co. Ltd., 23 Great Queen Street, London, W.C.2—Price 5/-

Atoms and Atomic Energy

by R. W. Hallows

IT has been our pleasure before to review earlier books by the same author, on radar, television, and wireless. Now he has produced another, this time on a subject which does not carry the same pleasant or practical background that the others do. Indeed, the matter is, in its technicalities very involved, but Mr. Hallows has the unusual gift of being able to deal with the most abstruse subjects in everyday language in methods of presentation which make thoroughly understandable, and almost pleasant, reading. The book, of course, is particularly of interest to those well versed in physics, but the steps and progress of the science through the pages of the book becomes clear and fascinating, rather like following clues and hypothesis in a clever detective novel. Whilst not exactly a light bedtime story, the book does yield a fascinating lucidity and knowledge for even the ordinary man.

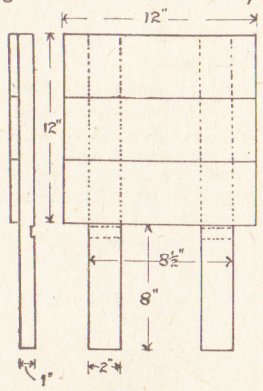
Published by Messrs. Chapman and Hall, 37 Essex Street, London, W.C.2—Price 10/6

The housewife will be delighted to have this handy

STEP LADDER ATTACHMENT

WORKING on a pair of steps can sometimes be very awkward for the home decorator or handyman. It is not at all comfortable to have a pail of whitewash or distemper balancing precariously on the somewhat narrow top of the steps. Besides running the risk of knocking it over at any moment, it does not allow the free movement necessary to wield a brush successfully.

All these difficulties can be avoided by making the little platform shown in the drawing. It can be attached to any pair of steps very quickly and will hold a pail at a comfortable working height, while allowing work to proceed in an easy manner.



Lay-out and side view of attachment

By making the platform 12ins. square it will fit any ordinary household steps, and is large enough to hold the usual size pail. It will not project much more than the space taken by the steps when fully open, which allows it to be used right up to the corner of a room.

It does not matter what kind of wood is used—any odd scraps will do, so long as they are quite sound.

Platform Supports

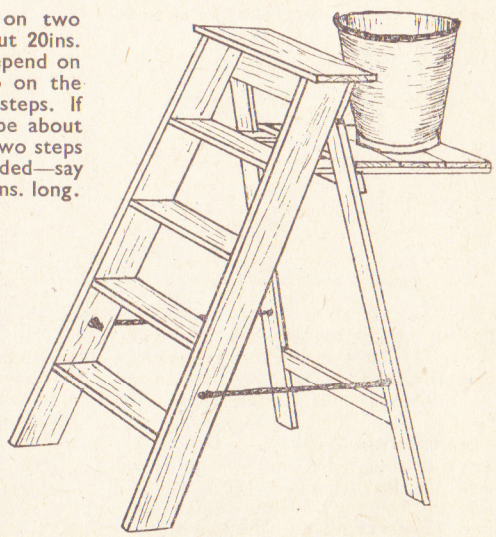
The platform is supported on two bars of 2ins. by 1in. wood about 20ins. long. The actual length will depend on the size of the steps and also on the position of the platform on the steps. If used near the top 20ins. will be about right, but if it is to be placed two steps down, extra length must be added—say about 4ins., making the bars 24ins. long.

The wood for the platform need not be more than ½in. thick. Any number of boards can be used to make up the necessary width of 12ins., or a number of slats 1in. or 1½ins. wide, with a space in between would be quite suitable. If you decide on this latter method, do not put the slats too far apart. It is probably best to have a solid platform, so that it will hold various tools and materials such as nails and screws without falling through the spaces.

The platform is supported on a strip of wood fixed to the back legs of the steps, while the ends of the platform bars rest under the top or second tread of the steps.

The position of the supporting strip must be determined when the steps are in position for use, allowance being made for the small groove cut on the under side of the platform bars which keeps the platform from sliding out. Quite a shallow groove will be sufficient; anything more than ⅛in. would weaken the bars too much.

Many improvements can be made to the platform once it is tested out. A very useful attachment was made by the writer for holding tools and other odds and ends used during the work in hand.



It took the form of a box with both sides open, and was attached to the under side of the platform. A depth of about 4ins. would be a very useful size to make it, thus making it into a sort of portable work bench. (301)

Any youngster would love this simple push-along

WHIRLING DISC TOY

A RATHER novel push-along type of toy this, which includes a rapidly rotating coloured disc, the colours of which can be changed at will. It would be amusing and interesting to any young kiddie, and provide exercise as well. A nice Christmas gift.

Some ½in. thick deal is suggested for making the body part, to make it strong enough to stand up to plenty of work, as it is likely to get at the hands of a healthy child. Parts of the body are shown, with dimensions, in Fig. 1. The top board (A) should be carefully marked out from a length of wood, long enough to include it and a suitable handle.

Handle Length

This part (the handle) can be of any reasonable length, perhaps, 24ins. would suit well. If, owing to the length of wood obtainable, cutting in one piece would be inconvenient, a portion of the handle part only can be cut as one, and the remaining handle cut separately and screwed to it.

The board cut, mark and saw out the slots, etc., carefully. The side bearing parts, which carry the wheels (B) are next cut, and holes for the axle bored ⅜in. where shown. These are then fitted to the board, being screwed and glued strongly in position. A post (C) is to be cut, which carries a spindle on which the disc rotates.

The easiest way to tackle this part is to cut first a 1½in. wide strip of the wood to

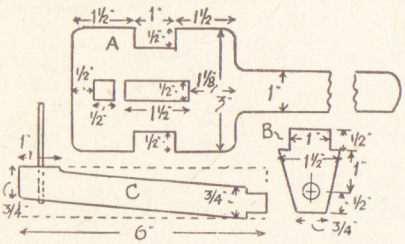


Fig. 1—Details of main parts

6ins. long, it should not then be a difficult matter to mark out the shape correctly. See the tenon at the bottom makes a tight fit in its mortise slot in the top board. This is the one nearest the front.

In the centre of the top of this, at ½in. down, drive in a 2½in. wire nail. File the head off, leaving about 1½ins. sticking out. On this the disc will rotate. Glue part (C) in its place. The handle part should be finished off by glass-papering the edges to smoothness, and shaping up the end to afford a comfortable grip to young fingers.

Wheels

A pair of 4in. wooden wheels will be required, and readers are urged to purchase these, the successful running of the toy demanding true wheels and it is not easy by any means to ensure this at home without the use of a lathe. All sizes of wheels can now be bought reasonably priced, and are scarcely worth the trouble of making anyhow.

Axle and Pulley

An axle of ⅜in. round wood rod will be required, long enough to fit across the bearings and leave enough for gluing the wheels on, as in drawing, Fig. 2. A pulley is to be made, and glued to the centre of the axle.

For this cut three discs of ¼in. fretwood, two with diameters of 2ins. and one with diameter of 1½ins. Glue the three together, bevel off outwards the edges of the larger discs, and bore the lot ⅜in. to fit the axle. Glue one wheel on, push through the side bearing, threading the pulley on, and then glue the pulley to the middle of the axle, and glue the remaining wheel in place. Allow enough latitude for the wheels to revolve without scraping the sides of the toy.

Now the whole article can be painted. Make it look bright and cheerful with gay brilliant colours. It is as well to leave the axle plain, also the groove of the pulley, as any paint applied to that part will most certainly be scraped off by

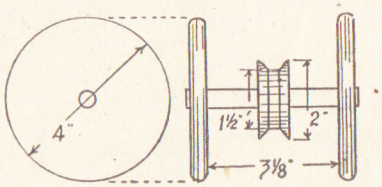


Fig. 2—Wheels, axle and pulley

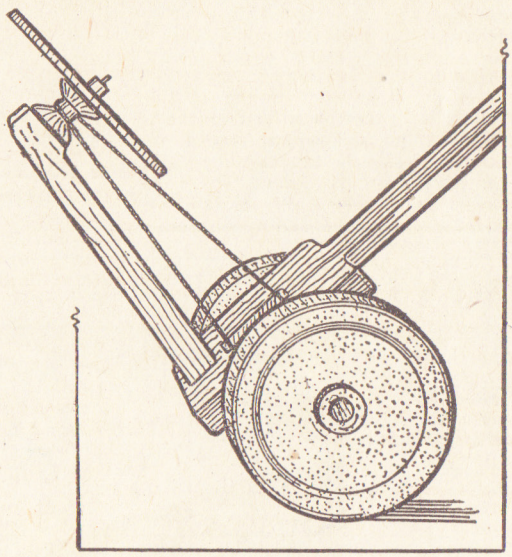
the cord afterwards.

A smaller pulley for the rotating disc should now be made. It is constructed similarly to the larger pulley already mentioned, to a diameter given in Fig. 3, and a hole bored through it to fit easily the nail spindle in part (C).

The disc itself can be cut to the diameter given from stout cardboard, and is glued to the pulley, a hole being cut at its centre to allow passage on the spindle. It is best here to see the edge of this hole does not contact the spindle at all, as if at all tight it may prevent the rapid rotation of the disc.

Colour Discs

Colour the disc as indicated in the drawing. This can be done with crayons, but a brilliant colouring is better



ensured with pigments of the poster paint quality. Alternatively, some of the bright coloured labels on tins of food stuff might provide enough for such a small disc and, of course, the reader is not limited strictly to the colours named in the drawing.

A second disc, of thinner cardboard, is cut to the same diameter. It is covered with white paper, and has four openings cut out, as at (D). This is fastened to the rotating disc with a pin. Now connect both the pulleys with a thin cord or twine, and as the toy is pushed along, the disc should rotate rapidly and show pleasing rings of colour. These will alter with every slight adjustment of disc (D) It may be a good plan here to stick a cork on the end of the spindle, if the disc tends to ride off it.

Wood Obtainable

With different colours on the rotating disc, and assorted shaped openings on the second disc, the combination of colours is unlimited. If buying the wood, one Hobbies panel of each of the following will be required—N.D.8 and G.4. Stick for handle extra, also wheels.

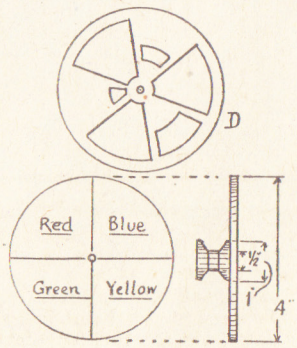
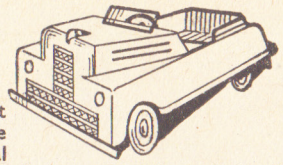


Fig. 4—Colour discs and holder

PEDAL MOTOR CAR



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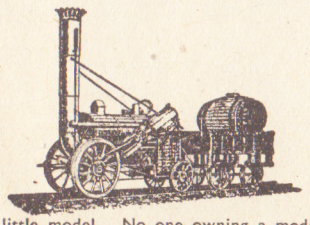

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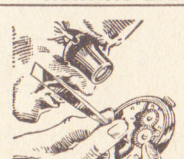

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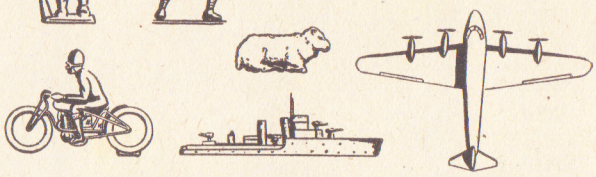

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